

CAPITAL PROJECT JUSTIFICATION

JOB NO:

IGS 91-3

W.O. 91-89200-00

TITLE:

Units 1 and 2 Burner Modifications and Replacement

DESCRIPTION:

To increase burner reliability and reduce future maintainance problems, the following design changes would be implemented into all burners for Units 1 and 2.

1. Replace 304 stainless steel components with thicker AISI 309 or 310 stainless steel components.
2. Relocate the outer register farther away from the furnace.
3. Extend the alloy tip of each nozzle to 48 inches.
4. Better support outer register plates.
5. Redesign slip seal casing.
6. Make all inner air reinforcing bars SST 304.

JUSTIFICATION:

Ongoing burner failures have been directly attributed to the elevated temperatures out-of-service burners experience. Poor component design and thermal stresses combine to cause repeated failures at the outer registers, slip seals, nozzles, and throats. Modifying selected burner components as outlined above will mitigate future maintenance problems and increase burner reliability.

All cost figures are the total for both Units.

A study by Energy and Environmental Research Corp. (EER) estimates \$59,000 will be spent annually to maintain the existing IGS burners, with a complete changeout of certian burner parts every six (6) years.

Using: 8.6 percent cost of capital
5.0 percent O&M escalation
25 year period (burner life)

The present value of maintaining all 96 IGS burners is \$11,652,548 (see Alternatives I).

The present value of modifying the burners as recommended is \$4,463,202. ^(20,000)

The Benefit-Cost Ratio is 2.61.

COST ESTIMATE:

Material Cost (excluding OEM markup)	\$ 952,000
OEM markup (100 percent)	\$ 952,000
Freight	<u>\$ 26,000</u>
Total Material	\$1,930,000
Engineering	\$ 80,000
Installation Labor and Equipment	\$ 968,000
Construction Overhead, Supervision, Fees	<u>\$ 142,000</u>
Total Installation Cost	\$1,110,000
Total Cost	<u>\$3,120,000</u>

ALTERNATIVES:

I. Keep Existing Burner Design

Registers, throat sleeves, and the throat sleeve casing of the existing burner design will need to be replaced every six (6) years. Annual expenses to maintain the burners would be approximately \$59,000. The cost summary for 1 six year period (6 year overhaul and interim maintenance) would be:

Material	\$ 624,000
OEM Markup	624,000
Engineering	40,000
Freight	24,000
Installation Labor & Equip.	864,000

Construction Overhead	276,480
Interim Maintenance (\$59,000 x 6 years)	708,000
Total	<u>\$3,160,480</u>

The present value of this alternative is \$11,652,548.

II. Operate All Eight (8) Pulverizers.

With all eight pulverizers in service, sufficient cooling air is provided to maintain acceptable temperatures at all burners. Boiler performance would improve with the reduction of the excess air needed to cool out-of-service burners. Coal fineness would improve with the lower feeder speeds. However, this alternative would have a direct effect on the frequency of pulverizer overhauls.

The cost to rebuild all burners to like new condition and then operate under this option would be:

Material	\$ 624,000
OEM Markup	624,000
Engineering	40,000
Freight	24,000
Installation Labor & Equip.	864,000
Construction Overhead	<u>276,480</u>
Total	<u>\$2,452,480</u>

The present value of this alternative is \$3,508,306, without allowances for burner and pulverizer maintenance.

III. Increase Cooling Air

Increased cooling air would help maintain burner temperatures at an acceptable level, but would do so at the expense of boiler performance. The effect of boiler performance on plant heat rate, would result in a loss of \$1,831,846 per year if the amount of cooling air through out-of-service burners is increased as required.

The present value of this alternative is \$42,372,216 considering maintenance costs and the loss of boiler efficiency.

SCHEDULE:

All scheduling to be controlled by LADWP.

DEFERRABILITY:

Not recommended. We are nearing the end of the first six year period, at which time the report recommends rebuilding all burners. The estimated cost of rebuilding the burners for one six year period is higher than the cost of resolving the problem for the economic life of the plant by modifying the burners as recommended.